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NOTES ON ECUADORIAN BUTTERFLIES. II. PAPILIO*

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COLORADO SPRINGS, COLORADO

Of the fifty-six species of this group of butterflies reported in Rothschild & Jordan (Nov. Zool., xiii, pp. 411–745, 1906) we have thirty-six and one other, not listed from Ecuador, in this monograph. At no time was collecting emphasis made upon the group. Since it has been a collector's favorite for so long we did not feel that we could spare the time from less well-known groups for such emphasis. Our collecting was restricted to a narrow east-west band across the Andes in the central part of the country. The material reported upon here represents in reality three field collections, one made by Wm. Clarke-Macintyre and Eugene Schilling at Balzapamba and Playas de Montalvo at the western foot of the Andes in April–June, 1938, our own collection made in the Pastaza and the Upano valleys during 1938 and 1939, and that of David Laddey made at Santo Domingo de los Colorados and Palmar on the Pacific slope in 1940–41.

The only references given in this paper are to Rothschild & Jordan's monograph which although thirty-five years old is still the standard work on South American *Papilio*.

When this paper was completed I sent it to Mr. R. C. Williams of Philadelphia for criticism in light of the Coxey collection at the Academy of Natural Sciences. Mr. Williams very kindly

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sent me considerable information which I have incorporated with my own notes. All references in the following discussions relative to material in the Academy collections are based on Mr. Williams' comments. I am grateful to him for these. This information has not been incorporated in the table at the close of the paper. It would not affect it in any major way.

17. **P. pizzaro** Staudinger (p. 452). I took two females at Puyo, 1000 m., Napo-Pastaza 3, 7.xii.38, that are apparently of this species. They are clearly neither *chabrias* Hewitson, *bolivar* Hewitson nor *cutorina* Staudinger, species that might be expected and whose females are similar. If these are *pizzaro* the species ranges to the eastern foothills of the Andes in Ecuador.

20f. **P. æneas bolivar** Hewitson (p. 457). In the Academy of Natural Sciences at Philadelphia (A.N.S.P.) there are 2 ♂♂, 2 ♀♀ from Mera, Napo-Pastaza (*Coxey*); 1 ♂ La Merced, Tungurahua (*Coxey*), and 4 ♂♂ 1 ♀ below Macas, Santiago-Zamora (*Feyer*).

23c. **P. sesostris** Cramer (p. 461–2). Although the nymotypical race is not recorded in R. & J. from Ecuador we took specimens at Puyo, 1000 m., Napo-Pastaza, 14.xii.38, and on the Rio Tutenongoza, near Sucua, 900 m., Santiago-Zamora, 10.ii.39, and Macintyre has sent us a male from the Rio Jondachi near Archidona, 800 m. collected by the Olallas in November, 1939. Neither of the west slope parties turned up race *tarquinius* Bdv. Perhaps it does not fly south so far as central west Ecuador. R. & J. record it only from the northwestern part. In the A.N.S.P. there are 1 ♂, 1 ♀ from Mera, Napo-Pastaza; 7 ♂♂, 1 ♀ La Merced, Tungurahua, and 2 ♂♂ Hda. La Mascota, Napo-Pastaza, collected by Coxey, and 4 ♂♂ 1 ♀ below Macas, and 1 ♂ Macas, Santiago-Zamora, collected by Feyer.

24b. **P. childrenæ œdippus** Lucas. (p. 463). A single specimen was taken at Sucua, 900 m., Santiago-Zamora, 6.ii.39. This is considerably to the south of any previous record. The specimen lacks the light subapical spot on the forewing and the red on the hindwing is restricted to a brilliant dash between Cu_1 and Cu_2. There is a faint, small, rose-pink spot in the same space on the underside. The upperside is not unlike *P. sesostris zestos* but differs from that Central American insect in having the green patch on the forewing extend into the cell. Another male was

taken by Laddey at Palmar, 200 m., Manabi, 4.iv.41. On this specimen, which like the first mentioned lacks the light spot on the forewing, the red marking on the hindwing is large and bold and the cell of the forewing is almost completely filled with green scales. There is a large red spot on the underside of the hindwing in this second specimen. It is possible that the east slope material is true *œdippus* and that the west slope material is worthy of a distinct name. This will only be shown by much more collecting on the west slope.

25a. **P. erlaces lacydes** Hewitson (p. 464). This is a very common and rather variable form in the valley of the Rio Pastaza through the eastern foothills of the Cordillera Oriental. We took 38 ♂♂ and 4 ♀♀ in this region and only 3 ♂♂ and 1 ♀ out of it. It was taken in practically every month of the year. Wet season specimens bear a greener patch on the forewings than do the dry season specimens. The number, size and shade of the red spots on the hindwing vary somewhat. The species seems to range from 1800 m., to 1000 m., in the humid forest. It is not found in the semi-arid region around Baños at 1800 m. One female and one male were taken at Puyo, in the Amazonian plain and two males were taken just out of the foothill region on the west bank of the Rio Upano, one at Sucua and one near Macas. None of our specimens has even a trace of a white spot on the forewing. The specimen from Ambato in Oberthür's collection noted by R. & J. is obviously from much lower down the Rio Pastaza. In the A.N.S.P. there are 2 ♂♂, 1 ♀ from La Merced, Tungurahua, and 32 ♂♂, 12 ♀♀ from Hda. Mascota collected by Coxey and 1 ♂, 1 ♀ from Macas collected by Feyer.

27. **P. drucei** Butler (p. 466). We took only two specimens of this species at Puyo, 1000 m., Napo-Pastaza, 12.xii.38. In the A.N.S.P. there are 1 ♀ from La Merced, Tungurahua, and 3 ♀♀ from Mera, Napo-Pastaza, collected by Coxey and a male from Hda. La Zatayacu, Rio Anzu, 600 m., Napo-Pastaza (*Macintyre*). Macintyre has sent me a pair from Huagra-yacu, 900 m., Napo-Pastaza, 14.iii–12.v.41.

30c. **P. vertumnus bogotanus** Felder (p. 470). We did not take this species. Coxey took a male at the Hda. La Mascota, Napo-

Pastaza, and 2 ♂♂ at La Merced, Tungurahua. These were determined by Schaus. They are in the collection of the A.N.S.P.

31c. **P. lycimenes paralius** Rothschild & Jordan (p. 474). This species is represented by 3 ♂♂ from Balzapamba, 700 m., Bolivar, iv.38, and 3 ♀♀ from Playas de Juan Montalvo, 30 m., Los Rios, 15.iv.38., taken by Macintyre and Schilling, and 1 ♂, 2 ♀♀ taken at Palmar, 200 m., Manabi, by David Laddey in April & May, 1941. In the A.N.S.P. there are 15 ♂♂, 6 ♀♀ from Naranjapata, 4 ♂♂, 6 ♀♀ from Dos Puentes, and 1 ♂ from Hda. Cutuguay, collected by Coxey; a pair from Huigra (*Rhoads*) and a female from Balzapamba.

34d. **P. iphidamus calogyna** Rothschild & Jordan (p. 481). Macintyre and Schilling collected a fine series of this race at Balzapamba; 11 ♂♂, 17 ♀♀ were taken in May and June, 1938, and 2 ♂♂, 1 ♀ were taken by them in April, 1938, at Playas de Juan Montalvo. Laddey took 2 ♂♂ and 2 ♀♀ near Santo Domingo de los Colorados, 500–550 m., Pichincha, in January and February, and 2 ♂♂, 3 ♀♀ at Palmar, 200 m., Manabi, in April & May, 1941. I am not at all certain that I have correctly identified all the Balzapamba females. I took a female at Puyo, 1000 m., Napo-Pastaza, 11.xii.38, that seems in no way to differ from the *calogyna* I have from the west slope. If my determination is correct this is the first record of the species east of the Andes in Ecuador. In Colombia the race *phalias* R. & J. has been taken on the slopes east of Bogata. The females of these two races are very difficult to separate and without eastern Ecuadorian males I hesitate to include the race *phalias* R. & J. as the eastern form in Ecuador.

40. **P. lysander** Cramer (p. 492). We took three males at Puyo, 1000 m., Napo-Pastaza, on December 5 and 6, 1938. There are 2 ♂♂ from Hda. La Mascota, Napo-Pastaza (*Coxey*), in the A.N.S.P. Macintyre took 4 ♂♂, 3 ♀♀ at Huagra-yacu, 900 m., Napo-Pastaza, between 14.iii and 12.v.41.

45a. **P. timias timias** Doubleday (p. 507). Macintyre and Schilling took 10 ♂♂ and 2 ♀♀ at Playas de Juan Montalvo, 30 m., Los Rios, in April, 1938. Laddey took a ♂ and a ♀ at Santo Domingo de las Colorados, Pichincha, 550 m., 12.xii.40. Race *potone* R. & J. is more probably a northern race than an altitude race. The record for this latter race from Ambato given in

R. & J. needs verification; I doubt it very much. In the collection of the A.N.S.P. are 6 ♂♂, 1 ♀ Naranjapata, and 15 ♂♂, 16 ♀♀ from Dos Puentes collected by Coxey and a male taken by Rhoads at Huigra.

51f. **P. polydamus polydamus** Linné (p. 520). Six specimens of this common species are in our Ecuadorian collections. 1 ♂, 2 ♀♀ were taken at Playas de Juan Montalvo, Los Rios, in March and April, 1938, by Macintyre and Schilling, another male was taken at Palmar, 200 m., Manabi, by Laddey on May 19, 1941, and two hail from the Amazonian slope, 1 ♂ from Abitagua, Napo-Pastaza, 1300 m., Jan., 1937, taken by Macintyre and 1 ♂ from Puyo, 1000 m., Napo-Pastaza, 7.xii.38, which Mrs. Brown captured. The east slope specimens differ from those from the west slope in a minor fashion. The limbal row of spots on the west slope specimens is bronzy while these spots on the hindwing of the east slope specimens is pale green. These rows are closer to the margin of the wings in the east slope specimens than in those from the west slope. The series is entirely inadequate to make a real comparison between east and west slope forms. Coxey collected a female at La Merced, Tungurahua (A.N.S.P.).

52. **P. philetas** Hewitson (p. 524). This common species is represented by ten specimens from the upper part of the rain forest in the valley of the Rio Pastaza. They were all taken by Macintyre's native collectors during August and September, 1938, at Yungilla on the Rio Blanco, a tributary of the Pastaza at 1800 m., a few miles east of Baños and out of the semi-arid area. In the A.N.S.P.. there are 11 ♂♂, 3 ♀♀ from La Merced, Tungurahua, and a male from Yungilla, Tungurahua, collected by Coxey, and 3 ♂♂, 2 ♀♀ from Macas (*Feyer*).

56b. **P. belus varus** Kollar (p. 529). 7 ♂♂ were taken in the Amazonian plain near the foothills. Four of these were captured by Macintyre at Jatunyacu, 700 m., Napo-Pastaza, in March, 1937; two at Puyo by the Browns, 7 and 15.xii.38, and one was purchased from the Olsons, missionaries at Sucua, Santiago-Zamora on the Rio Upano. Recently Macintyre sent me a male from Huagra-yacu, 900 m., 19.iii.41, two more from Bomboini-yacu, 900 m., and a fourth from the headwaters of the Rio Ara-

juno, 1000 m., 30.iv.41. All these stations are north of Mera and southeast of the Rio Anzu.

59. **P. crassus** Cramer (p. 536–7). In a recent shipment from Macintyre there were two males of the form *crassus* differing from Rothschild and Jordon's description in that the light scales on the forewing are old gold, not "yellowish creamy." These were taken at Huagra-yacu, 900 m., 9.iv.41, and Bomboini-yacu, 900 m., 10.v.41. Both stations are in the province of Napo-Pastaza.

60a. **P. ajax americus** Kollar (p. 541). I diverge from Rothschild & Jordan in calling this species *ajax*. They note that this name has priority but prefer the then more familiar *polyxenes*. This race is abundant in the cultivated valleys of the temperate parts of Ecuador. We took it as far east on the Pastaza as Rio Verde, Tungurahua, at 1400 m., in the drier part of the subtropical region. It is quite variable. Its early stages were described by Brown in *Bull. So. Calif. Acad. Sci.*, XXXVIII, 200–201, 1939. Some ninety bred specimens have been loaned to Chermock and are being studied along with the other races. Coxey collected this species at La Merced and Yungilla in Tungurahua and also at Hda. La Mascota, Napo-Pastaza. This last station is much further east than we took it. Coxey's 7 ♂♂ and 1 ♀ from that station leaves no doubt that this essentially temperate species will and does penetrate the tropics when its foodplant is available—cultivated white carrot, "zanohria blanca," in this case. 28 ♂♂ and 10 ♀♀ in the collection of the A.N.S.P. came from the above three stations.

66d. **P. thoas neacles** Rothschild & Jordan (p. 553). Laddey has sent me a single ♂ of this race from Santo Domingo de los Colorados, 500 m., Pichincha, 1.i.41, and another from Palmar, 200 m., Manabi, 25.iv.41. The A.N.S.P. collection contains single males from Dos Puentes and Naranjapata, collected by Coxey.

66f. **P. thoas cinyras** Ménétries (p. 560). I have a male from Puyo, 1000 m., Napo-Pastaza, May, 1937, taken by Macintyre, and another from Archidona, 800 m., xi.39, collected by the Olallas. In the A.N.S.P. are 11 ♂♂ from La Merced, Tungurahua (*Coxey*), and a female from Napo, Napo-Pastaza (*Macintyre*). There is also a male from Bucay, on the western slope

in the territory of the preceding race. R. C. Williams states that *cinyras* is considered a distinct species in the collection of the A.N.S.P. and certainly its markings seem quite distinct from *thoas*.

69b. **P. pæon pæon** Boisduval (p. 567). Macintyre and Schilling took 3 ♂♂ at Balzapamba, 630 m., Bolivar, during May and June, 1938. Coxey took this species in the valley of the Chanchan at stations ranging from about 400 m. to 2100 m.—1 ♂, Dos Puentes, 6 ♂♂, Huigra, 1200 m., 3 ♂♂, Huigra, 2100 m. In addition to these the A.N.S.P. has a pair collected at Huigra by Rhoads.

77c. **P. lycophron phanias** Rothschild & Jordan (p. 575). We did not take this species. There is a female from Hda. Zatayacu, Rio Anzu, 600 m., Napo-Pastaza (*Macintyre*) in the A.N.S.P.

78b. **P. androgeus androgeus** Cramer (p. 579). Laddey took a male at Santo Domingo de los Colorados, 500 m., Pichincha, 2.i.41. I purchased a male at Sucua, 900 m., Santiago-Zamora, from the Olsons, missionaries stationed there who in the past have supplied some collectors with native collected material from that region. This specimen differs in several respects from the west slope specimen noted above. The specimen is larger, the dorsal streak on the abdomen much narrower, the spot in Sc_3–Sc_4 greatly reduced, the yellow discal band on the hindwings does not extend distally beyond the end of the cell and there is only a marginal row of crescentic areas of yellow scales on the hindwing. On the underside the dark limbal band, bearing the rows of burnt orange and bluish lunules, is much broader; the cell of the forewing and the marginal band much broader and darker. I am not sure whether or not to designate this Sucua specimen race *laodocus* Fabricius or not. R. & J. report the race *a. androgeus* from N.W. Ecuador but not from eastern Ecuador although they have seen specimens from eastern Peru. In the collections of the A.N.S.P. there are 1 ♂, Hda. La Mascota, Napo-Pastaza, 2 ♀♀, Mera, Napo-Pastaza, collected by Coxey, and a male from Hda. La Zatayacu, Rio Anzu, 600 m., Napo-Pastaza (*Macintyre*). These are determined as f. *feyeri* Niepelt of which Williams writes me "doesn't seem much different from typical *androgeus* from Peru, Paraguay, etc."

90. **P. epenetus** Hewitson (p. 604). Macintyre and Schilling collected 5 ♂♂ at Balzapamba, 630 m., Bolivar, May and June, 1938, and 1 ♂ at Playas de Montalvo, 30 m., Los Rios, March, 1938.

95b. **P. anchisiades anchisiades** Esper. (p. 608). Macintyre and Schilling took 2 ♂♂ and 1 ♀ on the west slope. The males from Balzapamba, 630 m., Bolivar, May, 1938, vary somewhat, one of them approaching race *idæus* Fabricius in some respects. This specimen also has a very slight tail, the other is typical of *anchisiades*. The female, taken at Playas de Juan Montalvo, 30 m., Los Rios, April, 1938, approaches those of *idæus* on the underside of the forewing. There are 4 ♂♂ 2 ♀♀ collected by Feyer below Macas on the Rio Upano, Santiago-Zamora, in the A.N.S.P. I have a lone specimen from the humid jungles at the east foot of the Andes collected by Macintyre at Huagra-yacu, 900 m., Napo-Pastaza, 16.iii.41.

96c. **P. isidorus flavescens** Oberthür (p. 611). I have three males of this form taken by Macintyre at Abitagua, 1300 m., Napo-Pastaza, in June, 1937. He also took at the same time a male that closely resembles race *brises* Rothschild & Jordan, and another in January of that year at the same station that is inseparable from *brises*. Since Rothschild & Jordan's race came from "Bogota" I suspect that these red-spotted *isidorus* did not come from the Rio Magdalena as they suggest, but from the eastern slope of the Andes in Colombia. If this is so these Abitagua specimens suggest that the Oberthür's race is dichromic and that *brises* should be considered a form of *flavescens* rather than a race. The small size of the spots on the upperside of the hindwing lead me to believe that these red-spotted specimens are not the nymotypical race which flies in the south in S. E. Peru and Bolivia. Three males recently received from Macintyre from Huagra-yacu, 900 m., Napo-Pastaza, taken between 19.iii and 1.iv.41 show exactly the same variation as do the Abitagua specimens. Two are typical *flavescens*, the other a *brises*.

102d. **P. torpuatus leptalea** Rothschild & Jordan (p. 620). Macintyre and Schilling took 2 ♂♂ on 26.v.38 & vi.38 at Balzapamba and 1 ♂ at Playas de Montalvo in April, 1938.

102e. **P. torquatus torquatus** Cramer (p. 620). I took a single male at Macas, 1050 m., Santiago-Zamora, 26.i.39.

105. **P. zagreus** Doubleday (p. 624). This is another species that I do not have. Feyer sent the A.N.S.P. 17 ♂♂ from below Macas on the Rio Upano and 2 ♂♂ from Macas, Santiago-Zamora.

107c. **P. bachus belsazar** Niepelt. The Coxey collection in the A.N.S.P. contains a female from Cusarci above Macas on the Rio Upano that Feyer collected. Macintyre told me of taking a specimen just outside of Puyo which he sent to Frank Johnson.

115. **P. aristeus bitias** Godart (p. 643). I took three specimens, all males, at scattered localities on the eastern slope of the Andes; Rio Blanco, nr. Baños, Tungurahua, 1800 m., 12.x.38, Rio Topo, Tungurahua, 1226 m., 28.ix.38, and Macas, Santiago-Zamora, 1050 m., 25.i.39. The obsolescents of the distal band on the upperside of the hindwing seems to increase with altitude.

119a. **P. warscewiczi jelskii** Oberthür (p. 650). The Coxey collection in the A.N.S.P. contains a male from Cusarci above Macas on the Rio Upano (*Feyer*).

120a. **P. cacicus cacicus** Lucas (p. 652). A single male has been received from Macintyre. It was taken at Abitagua, 1200 m., ix.15.37. It is quite probable that the specimen reported by R. & J. from Ambato came from lower down the Rio Pastaza. A male from Macas, Santiago-Zamora (*Feyer*), is in the A.N.S.P.

121. **P. euterpinus** Godman & Salvin (p. 653). Coxey took this rarity (1 ♂) at Hda. La Mascota, Napo-Pastaza. There is another male from Macas collected by Feyer also in the A.N.S.P. Macintyre has taken one or two specimens in the Pastaza Valley near the Topo. These are in Frank Johnson's collection.

125. **P. phaon** f. **phaon** Boisduval (p. 662). Laddey took a typical male at La Iorena, an hacienda about 15 km. east of Santo Domingo de los Colorados, Pichincha, 550 m.

126d. **P. euryleon hænschi** Rothschild & Jordan (p. 665). Macintyre and Schilling took 2 ♂♂ at Balzapamba, 630 m., Bolivar, in April and May, 1938. Laddey has sent me a male from La Lorena, Pichincha, 550 m., 1.iii.41, and a female from Santo Domingo de los Colorados, 500 m., Pichincha, 2.i.41. Coxey collected 7 ♂♂ at Dos Puentes and a pair at Naranjapata. These are

in the collections of the A.N.S.P. where *hænschi* is considered a good species and not a race of *euryleon*.

126e. **P. euryleon anatmus** Rothschild & Jordan (p. 666). Coxey took a male at Hda. La Mascota, Napo-Pastaza (*A.N.S.P.*). This is considered a full species at A.N.S.P.

128c. **P. harmodius xeniades** Hewitson (p. 668). This race is common in the valley of the Rio Pastaza from Rio Blanco to Rio Topo. We collected 36 ♂♂ and 1 ♀. All but one male were taken in September, 1938; an equal period of collecting in March, 1939, yielded that single male. Nine of the males (25 per cent) have the spots on the hindwing, except the anal spot, buff or orange instead of red. The white submarginal bars are present in one third of the specimens. Only one specimen shows a white center in any of the red spots. The female is form *virginia* Kirby. This is also given full specific rank in the collections of the A.N.S.P., where there are 10 ♂♂, 5 ♀♀, Hda. La Mascota, Napo-Pastaza, and 1 ♂, La Merced, Tungurahua, among Coxey's collection. A female from Macas collected by Feyer in that collection was determined as form *virginia* Kirby by Fox. Macintyre's last shipment contained three males from Huagra-yacu, 900 m., Napo-Pastaza, 14.iii–9.v.41. One of these has orange spots.

129. **P. trapeza** Rothschild & Jordan (p. 669). I took a single male at Rio Blanco, 1000 m., a tributary of the Rio Upano about a half day's walk south of Macas, 30.i.39. Coxey took a male at Hda. La Mascota, Napo-Pastaza (*A.N.S.P.*).

148e. **P. agesilaus autosilaus** Bates (p. 706). We took six specimens at Puyo, 1000 m., Napo-Pastaza, 11–15.xii.38, and one at Sucua, 900 m., Santiago-Zamora, ii.39. Macintyre sent me five from the Jatunyacu, 700 m., taken in March, 1937, and one male from Huagra-yacu, 900 m., Napo-Pastaza, 14.iv.41. A female from Hda. La Zatayacu, Rio Anzu, 600 m., Napo-Pastaza (*Macintyre*), stands as a full species in the collection of the A.N.S.P.

149c. **P. glaucolaus leucas** Rothschild & Jordan (p. 706). Macintyre has sent me two specimens he caught on the Jatunyacu, 700 m., in March, 1937, and one from Rio Jondachi, nr. Archidona, 800 m., xi.39, taken by the Olallas.

150a. **P. molops molops** Rothschild & Jordan (p. 710). Lad-

dey has sent me a specimen of this species from Palmar, 200 m., Manabi, 25.iv.41. It is much greener than *P. protesilaus archesilaus,* smaller and with much heavier marginal and submarginal bands on the forewing.

151e. **P. protesilaus archesilaus** Felder (p. 717). Macintyre and Schilling took a single male at Balzapamba, 630 m., Bolivar, 23.v.38.

156b. **P. telesilaus telesilaus** Felder (p. 725). Dr. Edw. Henderson gave me a specimen that he collected at Pacaiyacu on the Rio Bobonaza in September, 1938.

157b. **P. marchandi panamensis** Oberthür (p. 727). Laddey collected a single male at Santo Domingo de los Colorados, Pichincha, 500 m., 9.ii.41.

158a. **P. thyastes thyastinus** Oberthür (p. 728). Macintyre collected a single male at Puyo, 1000 m., Napo-Pastaza in May, 1937.

162. **P. leucaspis leucaspis** Godart (p. 733). We took 2 ♂♂ at Hda. San Francisco, 1300 m., 20, 22.ix.38, 1 ♂, Rio Margajitas, 1250 m., viii.38; 1 ♂, Rio Topo, 1226 m., 30.ix.38, and received from Macintyre 1 ♂, Hda. La Palmera, nr. Rio Topo, 1200 m., vii.38. All of these stations are within a few miles of each other on the Rio Pastaza. Coxey took single males at each of La Merced, Tungurahua and Hda. La Mascota, Napo-Pastaza. These are in the collection of the A.N.S.P.

163. **P. serville serville** Godart (p. 736). Macintyre has sent me a series of 6 ♂♂, 1 ♀ from the Jatunyacu, 700 m., taken in March, 1937. Coxey took 12 ♂♂ at Hda. La Mascota, Napo-Pastaza (*A.N.S.P.*).

A breakdown of the faunal affinities of the Papilios found on the two sides of the Andes in Ecuador is interesting and shows how strongly the fauna of the Pacific littoral and foothills is influenced by the Central American fauna. This western area is at present little known and I do not doubt but that further collecting will tend to strengthen rather than weaken this affinity.

Comparing the two faunæ we find that only 13 species are common to the two slopes, a matter of 22.8 per cent of the Papilios known to fly in Ecuador.

	Eastern Ecuador		Western Ecuador		All Ecuador	
	No.	*Per cent*	*No.*	*Per cent*	*No.*	*Per cent*
Indigenous to Eucador	5	11.1	3	12.5	8	14.0
General neotropical species	14	31.1	9	37.5	15	26.3
C.A. race	(0)	(0)	(9)	(22)	.....	.....
S.A. race	(14)	(100)	(4)	(45)	.....	.....
Special race	(.....)	(.....)	(3)	(33)	.....	.....
Andean	.....	.....	1	4.2	1	1.7
North American species	1	2.2	1	4.2	1	1.7
South American species	21	46.6	2	8.3	21	36.8
Central American species	4	8.9	8	33.3	11	19.3
C.A. race	(0)	(0)	(2)	(25)	.....	.....
Special race	(4)	(100)	(6)	(75)	.....	.....
Total	45	99.9	24	100	57	99.8